STATINTL [redacted]

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IMAGE QUALITY METER

FUNCTION

The Image Quality Meter is a laboratory instrument which provides quantitative measurements of the quality of a photographic transparancy. An operator inserts the transparancy into the instrument and positions it such that suitable portions of the image are scanned for the measurement of the three quality indices described below. Output indications are provided on electrical meters for visual observation.

PURPOSE

The purposes of the Image Quality Meter are to measure the performance of the photographic system which produced the photograph being scanned, to provide a common basis for comparison of different photographs, to measure the effect of changes in photographic procedures and processing as it affects image quality, and to establish the necessary steps of subsequent image processing that may be fruitfully applied to a given photograph.

QUANTITIES MEASURED

Resolution

This is a measure of the number of lines per millimeter corresponding to the image detail recorded on the emulsion. The meter will provide a measurement of the maximum value of the resolution over the area scanned.

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Acutance

Image sharpness is measured in accordance with the mathematical

STATINTL definition of [redacted] The meter scans an area containing an abrupt gray level change (such as the edge of a building or roadway) and provides an output which increases with the rate of change of photographic density across the boundary.

Granularity

The scanner, functioning as an automatic microdensitometer, provides an output proportional to the fluctuations in photographic density, in an area of constant gray level.

PRINCIPLE OF OPERATION

The Image Quality Meter utilizes a moving spot scanner, in which the light from a mercury arc lamp is focused to a tiny spot and moved across the image. The light passing through the photograph is collected in a photomultiplier tube which provides an electrical output signal corresponding to the line of the picture being scanned. This electrical signal is applied to an electronic analog computer which computes the quantities measured from the input signal variations.

STATUS OF DEVELOPMENT

STATINTL The [redacted] is currently designing and fabricating a preliminary model of this instrument for delivery early in 1961. At the present time, the scanner design is underway, and some of the mechanical parts are about to be fabricated. A laboratory breadboard of substantially all of the electronic computer functions has been assembled and successfully tested.